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(71) Applicant: **SUMITOMO CHEM CO LTD**

(72) Inventor:
TANAKA KOZO
SHIBATA SATOSHI
GOTO FUMIAKI
SASAKI TOSHIO

(54) PRODUCTION OF HYDROGEN PEROXIDE

(57) Abstract:

PROBLEM TO BE SOLVED: To obtain high consn. hydrogen peroxide by effecting catalytic reaction of oxygen and hydrogen in a water-based reaction medium in the presence of a catalyst which is prepared by depositing gold on a platinum group metal by a photoreduction method.

SOLUTION: A semiconductor compd. carrier such as TiO_2 carrying a platinum group metal such as Pd is added to a hydrochloric acid soln. in which chloroauric acid is dissolved. After methanol is added, a NaOH soln. is added to control to pH4 to 5. The obtd. soln. is supplied in a reaction chamber and irradiated with light from a high pressure mercury lamp for a specified time

while stirring to effect photoreduction. After the reaction is completed, a powder is separated by filtering from the suspension, and then washed and dried to obtain a catalyst such as Au-Pd/ TiO_2 which carries a platinum group metal by about 0.1 to 5wt.%. Then an autoclave is charged with a solvent such as water and a stabilizer such as about 0.001 to 0.5N sulfuric acid, and then with a halide such as NaBr by $10^{-4}/1$ to $10^4/1$, by molar ratio to the platinum group metal and about 1 to 3000mg/l catalyst carrying the platinum group metal are added. A gaseous oxygen and a gaseous hydrogen are introduced into the autoclave to react at about 0 to 50°C under about 5 to $50\text{kg/cm}^2\text{G}$ pressure to obtain hydrogen peroxide.

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